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भाग 6 क्षमता अनुमोदन प्रक्रिया के आधार पर प्रेरकों की विषय विशिष्टि

Indian Standard

TRANSFORMERS AND INDUCTORS FOR USE IN ELECTRONIC AND TELECOMMUNICATION EQUIPMENT

PART 6 SECTIONAL SPECIFICATION FOR INDUCTORS ON THE BASIS OF CAPABILITY APPROVAL PROCEDURE

ICS 29.180

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 2000

Price Group 5

NATIONAL FOREWORD

This Indian Standard which is identical with IEC 1248-6 (1996) 'Transformers and inductors for use in electronic and telecommunication equipment — Part 6 : Sectional specification for inductors on the basis of the capability approval procedure' issued by the International Electrotechnical Commission (IEC) was adopted by the Bureau of Indian Standards on the recommendation of the Magnetic Components and Ferrite Materials Sectional Committee and approval of the Electronics and Telecommunication Division Council.

The text of the IEC Standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

CROSS REFERENCES

In the adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated :

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
IEC QC 001001 (1986) Basic rules of the IEC quality assessment system for electronic components (IECQ) Amendment 2 (1994)	IS QC 001001 :1988 Basic rules of the IEC quality assessment system for electronic components (IECQ)	Technically Equivalent
IEC QC 001002 (1986) Rules of procedure of the IEC quality assessment system for electronic components (IECQ) Amendment 2 (1994)	IS QC 001002 : 1988 Rules of procedure of the IEC quality assessment system for electronic components (IECQ)	do
IEC 68-2-6 (1982) Environmental testing — Part 2: Tests — Test Fc and guidance: Vibration (sinusoidal)	a) IS 9000 (Part 8) : 1981 Basic environmental testing procedures for electronic and electrical items : Part 8 Vibration (sinusoidal)	do
	b) IS 9001 (Part 13) : 1979 Guidance for environmental testing : Part 13 Vibration (sinusoidal) test	do
IEC 68-2-20 (1979) Environmental testing — Part 2: Tests — Test T : Soldering Amendment 2 (1987)	IS 9000 (Part 18): 1981 Basic environmental testing procedures for electronic and electrical items : Part 18 Solderability test	do
IEC 68-2-21 (1983) Environmental testing — Part 2: Tests — Test U : Robustness of terminations and integral mounting devices Amendment 2 (1991) Amendment 3 (1992)	IS 9000 (Part 19) : 1986 Basic environmental testing procedures for electronic and electrical items : Part 19 Test U : Robustness of termination and integral mounting devices	do

(Continued on third cover)

IS QC 260500 : 2000
IEC QC 260500 (1996)

Indian Standard

TRANSFORMERS AND INDUCTORS FOR USE IN ELECTRONIC AND TELECOMMUNICATION EQUIPMENT

PART 6 SECTIONAL SPECIFICATION FOR INDUCTORS ON THE BASIS OF CAPABILITY APPROVAL PROCEDURE

1 Scope

This part of IEC 1248 specifies how to prepare detail specifications for inductors to be released under the terms of IEC 1248-1 (QC 260000) capability approval. It includes a blank detail specification (BDS), which shows the format and indicates which tests are considered to be appropriate to this type of component, although the final selection of tests to be included in the inspection schedule is at the discretion of the specification writer. It also lists appropriate ratings and characteristics.

2 Normative references

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of IEC 1248. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 1248 are encouraged to investigate the possibility of applying the most recent editions of the normative documents listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC Guide 102: 1989, *Electronic components – Specification structures for quality assessment (Qualification approval and capability approval)*

IEC QC 001001: 1986, *Basic rules of the IEC Quality Assessment System for Electronic Components (IECQ)*
Amendment 2 (1994)

IEC QC 001002: 1986, *Rules of procedure of the IEC Quality Assessment System for Electronic Components (IECQ)*
Amendment 2 (1994)

IEC QC 001004: *Specifications list*

IEC QC 001005: *Register of firms, products and services approved under the IECQ System, including ISO 9000*

IEC 68-2: *Environmental testing – Part 2: Tests*

IEC 68-2-6: 1982, *Environmental testing – Part 2: Tests – Test Fc and guidance: Vibration (sinusoidal)*

IEC 68-2-20: 1979, *Environmental testing – Part 2: Tests – Test T: Soldering*
Amendment 2 (1987)

IEC 68-2-21: 1983, *Environmental testing – Part 2: Tests – Test U: Robustness of terminations and integral mounting devices*
Amendment 2 (1991), Amendment 3 (1992)

IEC 68-2-27: 1987, *Environmental testing – Part 2: Tests – Test Ea and Guidance: Shock*

IEC 68-2-29: 1987, *Environmental testing – Part 2: Tests – Test Eb and Guidance: Bump*

IEC 410: 1973, *Sampling plans and procedures for inspection by attributes*

IEC 1007: 1994, *Transformers and inductors for use in electronic and telecommunication equipment – Measuring methods and test procedures*

IEC 1248-1: 1996, *Transformers and inductors for use in electronic and telecommunication equipment – Part 1: Generic specification*

ISO 128: 1982, *Technical drawings – General principles of presentation*

ISO 129: 1985, *Technical drawings – Dimensioning – General principles, definitions, methods of execution and special indications*

3 Preparation of the detail specification

This standard is intended to be used for the preparation of detail specifications for inductors released under the terms of the IEC 1248-1 (QC 260000) capability approval procedure.

It is intended for use by the following originators:

a) a customer wishing to procure inductors that are within the scope of the approved capability of his supplying component manufacturer, for example for detail specifications (DS);

b) a capability approved manufacturer of inductors wishing to prepare specifications for his own products which are within the scope of his capability approval.

NOTES

1 The detail specification should take the form of the BDS shown in clause 5, particularly in respect of the front page format and, in principle, in respect of the presentation of the inspection requirements.

2 Unless otherwise specified, all the tests shown in the BDS are taken from IEC 1007. Those shown underlined concern operating characteristics of fundamental importance, and it is strongly recommended that these are selected by the specification writer for inclusion in the detail specification. The tests shown in plain type are listed for the convenience of the specification writer, and tests should be selected from them according to the particular application of the component.

3 The specification writer may specify tests and sampling levels different from, less than, or additional to those given in the BDS.

3.1 *General*

3.1.1 Where additional tests of a type not defined or invoked in IEC 1007 are required, these shall be fully specified in the detail specification.

3.1.2 Any tests considered as being destructive shall be so denoted in the test schedule by the addition of the notation "(D)".

NOTE – The use of this notation is not illustrated in the BDS.

3.1.3 Tests shall be grouped in the schedule according to the level of sampling required and, unless otherwise indicated (see 4.1 b)), in the order of testing required. Where 100 % testing is not required, inspection levels and acceptable quality levels shall be selected from IEC 410.

3.1.4 The completed detail specification shall be allocated a component identity number and issue status by the originator.

NOTES

1 This number is chosen by the originator (manufacturer or customer) within his own system. It is thus not subject to any external rules or codification.

2 In the special case of a manufacturer's detail specification for a standard catalogue item which the manufacturer wishes to be listed in IEC QC 001004, the national committee will allocate an appropriate number from its register.

3.1.5 A number allocated by the component manufacturer shall be additionally included in the detail specification, comprising this specification number, his factory identification code letters, and a unique number within his registration system, for example QC 260500/PQR/1234.

NOTE – After a detail specification has been allocated the manufacturer's reference number in accordance with 3.1.5, it is to be considered a contractual part of the order. Copies of all such detail specifications are to be retained by the manufacturer's chief inspector.

3.2 *Ratings and characteristics*

3.2.1 *Ratings*

In the case of customer-originated detail specifications, customer and manufacturer agreement shall be obtained on the ratings to be ascribed to the component in the detail specification. These ratings shall not exceed the scope of the manufacturer's capability approval (see also 1.12 of IEC 1248-1).

3.2.2 *Characteristics*

A customer shall prescribe in the detail specification any characteristic required for a component.

3.3 *Outline drawings and winding schematic diagram*

3.3.1 The detail specification shall incorporate a drawing of the inductors showing important features, such as those dimensions affecting interchangeability, restrictions on mounting, and marking requirements.

3.3.2 The detail specification shall incorporate a schematic diagram showing all windings, screens, taps and phasings, and giving termination identification.

4 Inspection requirements to be listed in the detail specification

4.1 *Conformance inspection*

The detail specification shall incorporate the following notes:

a) sampling inspections shall be carried out in accordance with IEC 410, normal inspection;

b) tests in a group may be carried out in any order, except where otherwise indicated (see 3.1.3);

c) components submitted to any tests marked (D) may not be released under IEC 1248-1 capability approval (D = destructive);

d) the values given for measurement limits are absolute values: measurement uncertainty is to be taken into account.

4.2 *Design verification*

The tests to be detailed under this heading are those which the specification writer considers to be inappropriate to lot-by-lot release, but appropriate to the verification of new and original designs. Accordingly, they are to be performed only when specifically so stated in the order, and the detail specification shall carry a statement to this effect.

If design verification is required, the number of specimens and the requirement that there shall be no failures shall be stated in the detail specification.

NOTE – Two specimens should normally be provided, unless otherwise stated.

5 Detail specification

The BDS which follows, when completed in accordance with clause 3, shall form the relevant detail specification.

NOTE – The front page of the BDS has been based upon the need for a customer's detail specification. Where a manufacturer's detail specification is required, some changes will be necessary, but the basic format should be retained.

Blank detail specification

Sheet 1 (of 5)

Originator's component identity number	
Specification available from:	ISSUE STATUS
	DATE

ELECTRONIC COMPONENTS OF ASSESSED QUALITY
DETAIL SPECIFICATION IN ACCORDANCE WITH
IEC 1248-6 (QC 260500)

INDUCTOR

BRIEF TECHNICAL DESCRIPTION

1) Core type and type of construction
2) Range of core size, inductance range, input signal level, frequency range

For detail dimensions and schematic diagram, see sheet 5.

IECQ Register of approvals (QC 001005, Part 2, Section 1)

Rules for variants

Additional capability

Manufacturer

Address

	Manufacturer's reference number
Capability approval No.	QC 260500/PQR/1234

(Continued on page 6)

Blank detail specification *(continued)*

Sheet 2 (of 5)

Originator's component identity number			
Inductor according to IEC 1248-6 (QC 260500)	ISSUE STATUS		
VALEURS ET CARACTÉRISTIQUES (voir 3.2 de la CEI 1248-6)	DATE		
Climatic category (see 3.2.2.2 of IEC 1248-1 (QC 260000))			
Maximum temperature range (storage/transport)			
Maximum temperature rise			
Mass			
Vibration (sinusoidal) (see IEC 68-2-6)			
Bump (see IEC 68-2-29)			
Shock (see IEC 68-2-27)			
Solderability (see IEC 68-2-20)			
Robustness of terminations (see IEC 68-2-21)			
Limiting winding voltage			
Frequency range			
Isolation voltage			
	Section of winding		
	1	2	3
Polarizing direct current			
Inductance			
Quality factor, Q			

(Continued on page 7)

Blank detail specification *(continued)*

Sheet 3 (of 5)

Originator's component identity number				
Inductor according to IEC 1248-6 (QC 260500)				ISSUE STATUS
INSPECTION REQUIREMENTS (see notes)				DATE
TEST	IL	AQL	IEC 1007 reference	Performance requirements and conditions of test
SAQL				
DESIGN VERIFICATION ONLY: two specimens, no failures (see 4.2 of IEC 1248-6) Design verification inspection comprises those tests listed below plus all those selected for conformance inspection. Design verification tests shall only be performed when specifically invoked by the relevant order.				
Temperature rise	As required		4.4.15	
Fire hazard	As required		4.5.16	
IN PROCESS INSPECTION: conducted during manufacture if a safety screen is specified				
Safety screens	100 %		4.4.18.2	See 4.2.2 of IEC 1007
Safety screen position	S4	1 %	4.2.1	
TESTS ON COMPLETED COMPONENTS				
Electric strength test	100 %		4.4.2.1	
Safety screen (if a screen is specified)	100 %		–	A test is made to confirm the presence of safety screens using the capacitance test for screens (see 4.4.18.1 of IEC 1007)
Visual inspection	II	0,25	4.2	
Dimensioning and gauging procedure	II	0,25	4.3	
Insulation resistance (standard atmosphere)	II	0,25	4.4.2.3	
DC winding resistance	S1	1 %	4.4.1.1	The required test shall be specified in the detail specification
THE APPROPRIATE TEST(S) should be selected from the following two[1]:				
Quality factor, Q	II	0,25	4.4.3.3	
Effective inductance and effective resistance	II	0,25	4.4.4.1	
TESTS ON COMPLETED COMPONENTS (continued)				
Induced voltage test	II	0,25	4.4.2.2	
Phase test (polarity)	II	0,25	4.4.17	
Magnetic shielding	S4	1 %	4.4.21.1	
Magnetic radiation (if specified)	S4	1 %	4.4.21.3	

[1] Depending upon the application: in some case other specific test may be more appropriate.

(Continued on page 8)

Blank detail specification *(continued)*

Sheet 4 (of 5)

Originator's component identity number				
Inductor according to IEC 1248-6 (QC 260500)				ISSUE STATUS
INSPECTION REQUIREMENTS (see notes)				DATE
TEST	IL	AQL	IEC 1007 reference	Performance requirements and conditions of test
TESTS ON COMPLETED COMPONENTS (continued)				
Continuity	S1	1 %	4.4.1.2	
Insulation resistance (hot)	S1	1 %	4.4.2.3	The insulation resistance shall be measured immediately after conditioning: that is, after the maximum winding temperature has been maintained for 6 h or more, or after two measurements of winding resistance at intervals of 30 min give the same result, whichever is the lesser period
Self-capacitance (distribution capacitance)	S1	1 %	4.4.6.1	
Inherent self-resonance	S1	1 %	4.4.8.1	
Capacitance test for screens	S1	1 %	4.4.18.1	
Acoustic noise	S1	1 %	4.4.19.1	
Magnetic influence (compass safe distance)	S1	1 %	4.4.21.2	
Insert additional tests as required:				

NOTES

1 Sampling inspection is to be carried out in accordance with IEC 410, normal inspection.

2 Tests in a group may be carried out in any order except where otherwise indicated (see 3.1.3 of IEC 1248-6).

3 Components submitted to any tests marked (D) may not be released under IEC 1248-1 (QC 260000) capability approval.

4 The values given for measurement limits are absolute values: measurement uncertainty is to be taken into account.

(Continued on page 9)

Blank detail specification *(concluded)*

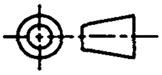
Sheet 5 (of 5)

Originator's component identity number	
Inductor according to IEC 1248-6 (QC 260500)	ISSUE STATUS
OUTLINE DRAWING SCHEMATIC	DATE

Drawing in accordance with ISO 128 and ISO 129

Dimensions in mm

Third angle projection



Drawing (see 3.3.1 of IEC 1248-6):

Marking: Type designation
Manufacturer's name or trade mark
Production lot number or date code
} as a minimum position to be indicated

Schematic diagram (see 3.3.2 of IEC 1248-6):

(Continued from second cover)

IEC 68-2-27 (1987) Environmental testing — Part 2: Tests — Test Ea and guidance: Shock	a)	IS 9000 (Part 7/Sec 1) : 1979 Basic environmental testing procedures for electronic and electrical items : Part 7 Impact test, Section 1 Shock test	Technically Equivalent
	b)	IS 9001 (Part 17/Sec 1) : 1985 Guidance for environmental testing : Part 17 Impact test, Section 1 Shock test	do
IEC 68-2-29 (1987) Environmental testing — Part 2: Tests — Test Eb and guidance: Bump	a)	IS 9000 (Part 7/Sec 2) : 1979 Basic environmental testing procedures for electronic and electrical items : Part 7 Impact test, Section 2 Bump	do
	b)	IS 9001 (Part 17/Sec 2) : 1985 Guidance for environmental testing : Part 17 Impact test, Section 2 Bump test	do
IEC 1248-1 (1996) Transformers and inductors for use in electronic and telecommunication equipment — Part 1 : Generic specification		IS QC 260000 : 2000 Transformers and inductors for use in electronic and telecommunication : equipment : Part 1 Generic specification	Identical
ISO 128 (1982) Technical drawings — General principles of presentation		IS 10714 : 1983 General principles of presentation on technical drawings	do
ISO 129 (1985) Technical drawings — Dimensioning — General principles, definitions, methods of execution and special indications		IS 11669 : 1986 General principles of dimensioning on technical drawings	do

The concerned Technical Committee responsible for preparation of this standard has reviewed the provisions of the following International publications and has decided that they are acceptable for use in conjunction with this standard:

IEC Guide 102 (1989)	Electronic components — Specification structures for quality assessment (Quality approval and capability approval)
IEC QC 001004	Specification list
IEC QC 001005	Register of firms, products and services approved under the IECQ System, including ISO 9000
IEC 410 (1973)	Sampling plans and procedures for inspection by attributes
IEC 1007 (1994)	Transformers and inductors for use in electronic and telecommunication equipment — Measuring methods and test procedures

Only the English language text of the International Standard has been retained while adopting it in this Indian Standard.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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